of Herbart, and that the very phraseology of the school, with its "complexes" and "suppressions," has been derived from the same source. From the standpoint of clinical experience, as well as on grounds of psychological theory, Dr. Sidis roundly asserts that the special theories of the Freudians in regard to desire, to sexuality, and to voluntary suppression of painful ideas are not only gratuitous assumptions, but are demonstrably untrue. So far from being forgotten, painful ideas are retained in the memory more tenaciously than pleasurable ideas; the experience of the race and the individual enforces this view. When a painful experience becomes subconscious, it is not because of, but rather in spite of, its painful character. The "suppressed complex" of Freud is merely a new and inappropriate name for what has been commonly known in psychopathology as a dissociated system. Dr. Sidis' uncompromising criticism is of interest in view of the extraordinary vogue which the psycho-analytic doctrines are enjoying for the moment in this country and in America.

The second part of the book deals at some length with the author's "theory of moment consciousness." This theory presents a general view of the nature and development of consciousness, from reflex consciousness to compound reflex and instinctive consciousness, and ultimately to the highest form of consciousness, self-consciousness. At each of these stages, from the most elementary to the most complex, it is to be assumed that there exists a psycho-biological individuality which synthetises the psychic state. This individuality, conceived as being both subject and content, is the moment consciousness. It is the psychic aspect of sensori-motor reaction, of the organism's adaptation to external conditions. The more complex moments are formed of aggregates of other moments, the lower types being subordinate to the higher type which constitutes the nucleus of the total psychosis. The author claims for this hypothesis that it offers an intelligible and consistent view of the processes of mental life in normal and abnormal activity, and further that it deals wholly with psychic facts, and is not vitiated by the introduction of terms and concepts of the mechanical or purely physiological order. The latter claim at all events would appear to be justified, and Dr. Sidis has certainly done good service in insisting on the fact, occasionally overlooked by psychologists with a medical bias, that the translating of mental states into terms of physical changes is no more than a metaphorical device, and not, perhaps, a very useful one at that. W. C. SULLIVAN, M.D.

Hollander, BERNARD, M.D. *Abnormal Children. A book for parents, teachers and medical officers of schools.* With 13 illustrations. London: Kegan Paul; 1916; pp. 224;; price 3s. 6d. net.

THE Mental Deficiency Act, 1913, which became law on April 1st, 1914, has been the means of adding considerably to the literature of mentally deficient children. This Act realises the existence of grades of weak-mindedness, which it endeavours to encompass within terms of definition; but the definition of moral imbecility as one upon which punishment has no effect presupposes its application, and proof of this should be afforded before the child affected can receive proper treatment under the Act, a presupposition which neither parents nor guardians readily admit. The difficulties of diagnosing the various grades had already been anticipated by Binet, who assumed that some children were physiologically backward whilst not intellectually deficient or chronologically backward whilst not pedagogically so.

The above small volume is well written, as are all Dr. Hollander's contributions. It deals in the main with the mental and moral abnormalities rather than with the physical defects. It is certainly interesting as well as instructive, and it should prove a help not only to parents and teachers, but also to intelligent social workers. The book begins with the

eugenic maxim that without a faulty heredity there would be little degeneracy in the world, and the author is evidently a believer in the Karl Pearson school, which urges that even moral dispositions and tendencies descend from father to son. He rightly insists that poverty, which implies the daily necessity of pinching and saving and denying self, is one of the most potent factors in crystallising a neurosis in a tainted family, and eugenic living, by modifying poverty, would tend to control degeneracy. The author asserts that he "possesses absolute proof that drunken parents had produced idiocy and epilepsy in their children." Although this may be within the author's experience, and it is an assertion met with as to the direct cause of moral imbecility, yet it is difficult to connect cause and effect in such a complex condition as weak-mindedness where there are of necessity several if not many convergent causal factors. We think the author might have elaborated upon the harmful effects of syphilis in view of the present active crusade for its control. Although the book is written for medical officers of schools, among others, yet no mention is made of epilepsy as resulting from syphilis, nor of developmental or juvenile general paralysis, nor of the Wasserman test, the cost of which it is henceforth proposed to defray out of the public purse. We are not convinced of the author's statement in regard to the influence of maternal impressions as the cause of deformities or peculiarities, in spite of there being no lack of confirmation from mothers to support the occurrence of a fright during pregnancy. The author is at his best in the clear and philosophical description of the moral imbecile, one of the best chapters in the book. In a useful table giving the averages of mental and physical development in the infant and up to the age of three years, we do not agree that the moral sense shows its first qualities at a year old. Every observant and well-trained nurse and every careful mother would assign this to a much earlier period, and from three to six months would meet with more general acceptation. The chapter upon forms of insanity in childhood is adequate, but it is not the experience of practical psychiatrists that "the course of this affection (Dementia Præcox) may be arrested at any stage after a few months or years." This condition is an innate tendency towards decay owing to an incomplete cerebral metabolism, possibly connected with oxidation, and it is in the main incurable. In a chapter upon abnormal heads we consider that the author lays too great a stress upon the development of the frontal lobes as a sign of potential intelligence. The most recent researches into the structure, functions, evolution, and biological significance of the cerebral cortex do not support the author's views, which are those of Gall and Spurzheim, based upon uncritical data. The importance of the cerebral cortex is not a question of the size of the lobes so much as of the quality of the grey matter, *i.e.*, its richness in pyramidal cells and in association fibres; the best brain is that of greatest measurement from ear to ear, or even that with a large occipital rather than a frontal area, owing to the greater development of the association centres. The phylo-genetic importance of the mammalian brain lies in the development of the neopalluim or cortex rather than in the size of the frontal lobes, and the division of the human brain into lobes is of less functional significance than it is of topographical convenience. It cannot be too strongly insisted upon that the whole brain thinks, wills and feels, and the cerebral cortex, like the cerebellum, is not the seat of separate faculties. A poor cortex indicates a diminished general intelligence. It is, we maintain, unsound to state that a specific cortical area is the exclusive organ of any particular mental component, and this view is supported by clinico-pathological evidence. Every part of the cerebral cortex is in direct or indirect physiological connection with every other part, and each can influence volitional impulses through the motor centres of the pre-central gyrus and of the lower neurons. The author is inclined to use the term "suggestion" with

inverted commas in the treatment of certain cases of mental deficiency. Our interpretation of suggestion is in a wider sense, and we use it not in relation to hypnotism but as the adoption through instruction of the views of the teacher, be he parent, guardian, nurse, or expert pedagogue. Dr. Hollander has succeeded in writing an illuminating and readable little volume which should be studied by all interested in knowing more than the elements of the subject the author has chosen to expound.

ROBERT ARMSTRONG-JONES, M.D.

Morgan, T. H., **Sturtevant,** A. H., **Muller,** H. J., and **Bridges,** C.B. *The Mechanism of Mendelian Heredity.* New York: H. Holt and Co.; 1915; pp. 262; price 12s.

THE study of heredity in the past suffered from too much theorising about the mechanism of the transmission of inherited characters, before the facts were sufficiently known to justify detailed speculation. Hence, since the advent of Mendelism, students of the subject have shown a certain reluctance to consider such speculations, and have devoted themselves, no doubt rightly, to discovering the facts before attempting to explain them. But in general outline at least the facts are now known in such a way that some explanation of their mechanism is demanded, and no one who reads this book by Professor Morgan and his associates can doubt that they are fully justified in collecting together the evidence as they have done.

Very soon after the re-discovery of Mendel's work it was pointed out by American cytologists that the facts of Mendelian segregation were paralleled in a remarkable way by the behaviour of the chromosomes in the maturation of the germ-cells, and it seemed hardly possible that two sets of phenomena, taking place concurrently and exactly corresponding with each other, could be unconnected. But there were various difficulties in the way of accepting the hypothesis that the chromosomes were the "bearers" of Mendelian characters, and the hypothesis, although so attractive, remained for some time little more than a speculation. Gradually, however, the evidence in its favour has accumulated, largely through the extraordinarily interesting work on *Drosophila* done in Professor Morgan's laboratory, and the most important part of the book consists of a summary of this and similar work, a summary which is all the more valuable because the work has hitherto been available to a great extent only in papers scattered in various journals. The book, however, deals with other subjects beside the chromosome hypothesis; the authors discuss such subjects as multiple allelomorphs (the existence of more than two characters allelomorphic with one another), multiple factors (the existence of two or more factors having the same visible effect), the "presence-and-absence" hypothesis, the nature of sex-factors, etc.

The book is itself a summary, and to summarize it adequately in a short space is impossible. We shall confine ourselves chiefly, therefore, to the relation of chromosomes to inherited characters, and in that section of the subject refer especially to the work on *Drosophila*, merely mentioning that other related work is considered in the volume before us in its proper connection, and that full justice is done by the writers to investigators of other forms and in other countries.

In the six years or so during which *Drosophila* has been bred in Professor Morgan's laboratory, some scores of mutations have arisen in his stock, nearly all of which show Mendelian inheritance. Since the reduced number of chromosomes is four, it is clear that if inherited characters are "borne" by chromosomes, many characters must be borne by one chromosome. One of the most conspicuous features about inheritance in *Drosophila* is the phenomenon known in England as "gametic coupling," and in America as "linkage." It is found that the characters fall into groups and that when a fly having two or more characters belonging to one group is mated with one lacking these characters, then